

**PROPYLENE DIENE COPOLYMERS****ABSTRACT**

5           The co-polymerization reaction of one or more olefin monomers, such as  
propylene, with  $\alpha,\omega$ -diene units and the resulting copolymers are provided.  
More specifically, the copolymer may have from 90 to 99.999 weight percent of  
olefins and from 0.001 to 2.000 weight percent of  $\alpha,\omega$ -dienes. The copolymer  
may have a weight average molecular weight in the range from 50,000 to  
10   2,000,000, a crystallization temperature in the range from 115 °C to 135 °C and  
a melt flow rate in the range from 0.1 dg/min to 100 dg/min. These copolymers  
may be employed in a wide variety of applications, the articles of which include,  
for example, films, fibers, such as spunbonded and meltblown fibers, fabrics,  
such as nonwoven fabrics, and molded articles. The copolymer may further in-  
15   clude at least two crystalline populations. Desirably, the melting point range of  
one of the crystalline populations is distinguishable from the melting point range  
of another crystalline population by a temperature range of from 1°C to 8°C.  
More desirably, one of the crystalline populations has a melting point in the  
range from 152 °C to 158 °C and another crystalline population has a melting  
20   point in the range from 142 °C to 148 °C.